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possesses a degree of plausibility, but still there are no facts as yet to substantiate it, and in the absence of these it is well to await developments, especially as he gives this paper simply as a preliminary communication.

E. C. A.

### III.—ABNORMAL.

#### A FEW PRACTICAL SUGGESTIONS TO PHYSICIANS IN ASYLUMS, HOSPITALS, ETC., FOR THE OBSERVATION OF PATIENTS SUFFERING FROM MENTAL OR NERVOUS DISEASE.

##### I.

The following suggestions are made with the view to getting data beyond those strictly necessary for diagnosis, since such data would be extremely valuable both from the psychological standpoint and as a basis for determining the function of diseased parts, should the case come to autopsy.

*How to observe.*—Patient should be away from all distractions, in a room apart, and at ease—as a rule, either sitting or lying down, and with the mind placid. Experiments should rarely last an hour, as the attention is easily fatigued. Successive observations should be made at the same time of day. For experiments not involving the eyes it is best to have the patient thoroughly blindfolded.

*Records.*—May be written, or in some cases, *e. g.* areas of anaesthesia, plotted on an outline of the body, such as may be copied from any anatomy.

In progressive disease, a careful study of one patient has more value than a casual study of several.

*Beginning with the skin sensations.*—Is the sense of contact anywhere absent? Where? If present, test “discriminative sensibility” with compasses. For a table of the normal discriminations in various regions see Foster’s *Text-book of Physiology* under “Tactile Sensations.” Compasses should be made of a substance non-conductive of heat, and slightly blunted at the points, like the rounded end of a small needle. The best form is that where one point is fixed and the other slides along an arm (at right angles to the first point) on which a scale is marked so that the distance between the points is easily read off. See *Aesthesiometer*, by J. Jastrow, *AMERICAN JOURNAL OF PSYCHOLOGY*, Vol. I, p. 552.

*Sense of location.*—The patient to touch a spot on his body which the observer is touching.

*Temperature sense.*—Discrimination of differences. Two objects—preferably thermometers with large bulbs—the temperature of which is known, are touched successively to the same spot on the body and the patient required to distinguish between them.

*Sensibility to heat and cold.*—Test by applying metal points suitably warmed or cooled. If these sensations are dull, the area stimulated must often be large, a square inch or more, to get any reaction at all. Refer to *Eine neue Methode der Temperatursinnprüfung*, Dr. A. Goldscheider, *Archiv für Psychiatrie und Nervenkrankheiten*, Bd. XVIII, Heft 3, 1887. *Research on the Temperature-sense*, H. H. Donaldson, *Mind*, No. XXXIX, 1885.

Those cases in which the sensation for one sort of temperature stimulus remains while that for the other is absent, are specially important.

*Motion on the skin.*—By drawing a point up or down the skin of a limb, to determine whether the direction can be recognized. Refer to *Motor Sensations of the Skin*, by G. Stanley Hall and H. H. Donaldson, Mind, No. XL, 1886.

*Pressure.*—By placing weights successively on the same spot, the patient to detect the difference between any pair of weights. Such weights can be easily made by loading paper cartridge-shells with various charges of shot.

*Tickling.*—It is specially important to determine the conditions under which this disappears.

*Muscle-sense.*—Discrimination of weights. Weights to be lifted and thus distinguished. Mr. Francis Galton has a set of weights for this purpose. See *On Apparatus for Testing the Delicacy of Muscular and other Senses in Different Persons*, by Francis Galton, F. R. S., Journal of the Anthropological Institute, May, 1883. A brief account of this is given in *A Descriptive List of Anthropometric Apparatus, etc.*, published by the Cambridge Scientific Instrument Co., Cambridge, England. Other apparatus, to be mentioned later, is described in the same publication, and I shall refer to this catalogue in these cases simply as the "descriptive list."

With paper cartridge-shells filled with shot, the more elegant apparatus of Galton can be fairly imitated.

*Position of limbs.*—To imitate with a sound limb the position in which the affected limb is placed, or the reverse. Eyes closed.

*Clonus, Knee-jerk.* See *The Variations of the Normal Knee-jerk and their Relations to the Activity of the Central Nervous System*, Dr. Warren P. Lombard, AMERICAN JOURNAL OF PSYCHOLOGY, Vol. I, 1887.

*Vision.*—Ophthalmoscopic data. Pupillary reactions. In case of paralysis of the external ocular muscles, the subjective sensations of motion on innervation of the paralyzed muscles.

Field of vision.

Field for various colors. For this, some sort of a perimeter is needed.

Color blindness. Some system of colored wools is the simplest device for this purpose.

Visualization. Number-forms, etc. See *Inquiries into Human Faculty and its Development*, Francis Galton, F. R. S., Macmillan & Co., 1883.

*Hearing.*—Limits of audition, by means of a small whistle. See "Descriptive list."

Appreciation of pitch. For specially constructed organ-pipe see "Descriptive list."

Colored sounds. Associations of certain colors with given tones. Refer to *Zwangmässige Lichtempfindungen*, Lehmann and Bleuler. *Inquiries into human faculty, &c.*, Francis Galton.

Time sense. Repetition and maintenance of a given tempo. This involves the use of some device by which a graphic record can be obtained—a revolving drum, for example. Refer to a series of articles in *Wundt's Studien* under the title "Zeitsinn."

*Smell.*—Its delicacy, by means of standard solutions of graded strength.

*Taste*.—Test different portions of the tongue for bitter, sweet, acid, and salt. For bitter and sweet the test can now be made with accuracy. See *Note on the Specific Energy of the Nerves of Taste*, by W. H. Howell and J. H. Kastle, Studies from the Biological Laboratory of the Johns Hopkins University, Baltimore, Vol. IV, 1887.

*Equilibrium sense*.—Special susceptibility to dizziness on whirling, etc. These facts bear on the functions of the semi-circular canals. See *The Sense of Dizziness in Deaf-Mutes*, American Journal of Otology, Boston, 1882, by W. James.

*Generative organs*.—Cremaster reflex. Prepuce: does it cover glans? Perverted sexual instincts; refer to von Krafft-Ebing, *Perversion of the Sexual Instinct; Report of Cases*. (Translated by H. M. Jewett, Alienist and Neurol., St. Louis, 1888, Vol. IX). Dreams; refer to Julius Nelson, *A Study of Dreams*, AMERICAN JOURNAL OF PSYCHOLOGY, Vol. I, No. 3.

*Reaction time*.—To get valuable results, some apparatus is needed. The simplest is that described by Joseph W. Warren, M. D., in a paper *On the Effect of Pure Alcohol on the Reaction Time, with a Description of a New Chronoscope*, Journal of Physiology, Vol. VIII, 1887. The "Hipp Chronoscope" is a somewhat costly instrument, to be used only with great caution. For the conditions attending its use see *Psychometrische Untersuchungen*, by J. McK. Cattell, Philosophische Studien, edited by Wundt, Vol. III, 1886. There is further a way of recording the reaction time on a revolving drum, such as is used in astronomical observatories.

*Aphasia*.—See *Aphasia*, by Dr. M. Allen Starr, Transactions of the Congress of American Physicians and Surgeons, Vol. I, 1888; and Kussmaul, in Ziemssen's Cyclopaedia, XIV, pp. 581-875. Refer to *Versuch einer Darstellung unserer heutigen Kenntnisse in der Lehre von der Aphasie*, Ernst Malachowski, Volkmann's Klin. Vorträge, No. 324.

*Handwriting*.—Refer to *Die Schrift*, von Dr. Albrecht Erlennmeyer, Stuttgart, 1879. *On the Writing of the Insane*, by G. Mackenzie Bacon, M. D., London, 1870.

*Muscles*.—Exact determination of muscles affected in paralysis. Very important for getting the motor centers in the spinal cord.

## II.

*Mental derangement*.—Study of the incipient stages and the central point of the alienation. See *Insistent and Fixed Ideas*, Edward Cowles, M. D., AM. JOURNAL OF PSYCHOLOGY, Vol. I. *Paranoia*, William Noyes, M. D., AM. JOURNAL OF PSYCHOLOGY, Vol. I. *Extract from the Autobiography of a Paranoiac*, Dr. Frederick Peterson, AM. JOURNAL OF PSYCHOLOGY, Vol. II, No. 2, 1889.

## III.

*Removal of central nervous system*.—Dura to be left at points where it is at all adherent. If the brain is to be used for microscopic examination, injection of it through the aorta with 2 per cent bichromate of potash removes blood and facilitates hardening; not permissible, of course, where hemorrhage is suspected.

The cord can be removed from the ventral side by chipping off the bodies of the vertebrae with broad chisels specially made for the purpose, or dorsally, by sawing through the arches of the vertebrae with a double saw (made by Luer, Paris), or by the common chisel. The spinal ganglia should be removed whenever possible; also sympathetic ganglia. Bits of peripheral nerve should be tied out straight on a bit of wood or cork before being put in the hardening fluid. Refer to v. Bischoff's *Führer bei den Präparirübungen*, etc., edited by N. Rüdinger, München, 1886.

The form of the brain is best preserved by receiving it in a jelly mould padded with moist cotton; by the use of two such moulds it can be turned over with little distortion.

In taking the weight it should be noted what membranes are on; how much of the cord is attached; whether the fluid has been removed from the ventricles, etc.

For the convolutions Ecker is the most desirable authority, having been accepted in the current text-books. Refer to *Die Hirnwindungen des Menschen*, etc., von Alex. Ecker, zweite Auflage, Braunschweig, 1883. There is a translation of the above (1st edition) by R. T. Edes, New York, 1873.

*In sectioning the brain.*—First, open the lateral ventricles by a median section a few millimeters to one side of the middle line. This empties the ventricles of fluid. All cuts to be made with one sweep of the knife, giving a smooth surface. In the case of the hemispheres, cut from the middle line outwards, thus leaving the pieces bound together by the pia in such a manner that after the sectioning is over the convolutions can be reconstructed. For details, see *Die Sections-Technik*, etc., von Rudolf Virchow, dritte Auflage, Berlin, 1884.

The records of lesions are made much clearer by a sketch. Lebon & Co., 23 Southampton Buildings, Chancery Lane, London, W. C., England, furnish sets of typical sections of the brain printed on gummed paper. On these the lesion can be indicated and the sketch then pasted in the record book.

*Preserving material.*—The brain and cord are best hardened for most purposes in potassium bichromate, 2 per cent. The quantity must be large at first and often changed. A brain should not be put in less than one gallon of bichromate, and this should be changed as often as it becomes turbid, say 6-10 times. During hardening in bichromate the specimen is best kept at a moderately low temperature, say 40°-50° F., and in the dark. The strength of the solution may be gradually increased to 4 or 5 per cent in the later stages of the process. When the material is hardened it is firm yet springy, and cuts in thin sections with a razor without having the sections break. The length of time requisite for this ideal condition varies with the part of the nervous system, the strength and quantity of the bichromate, the freshness of the specimen, and the temperature. For an entire brain it may vary from 6 weeks to 3 months or more. Where the material is soft through post-mortem changes, hardening can be obtained by adding  $\frac{1}{4}$  per cent copper sulphate to the bichromate solution. The specimen being hardened, it must be thoroughly washed out in cold running water. This may take 3 or 4 days in the case of an entire brain. The specimen may then be preserved indefinitely in strong camphor

water or 80 per cent alcohol. In camphor water it should be watched, to make sure that no mould forms on it. Brains preserved in camphor water are to be preferred for further microscopic study.

Refer for description of the finer anatomy to *Anleitung beim Studium des Baues der nervösen Centralorgane im gesunden und kranken Zustande*, von Dr. H. Obersteiner, 1888. An English translation of this book is promised soon.

In addition to the books and articles mentioned above, the following may be referred to as embodying recent advances in the field of physiological psychology and as illustrating the value of experimental and clinical data to psychology: *Grundzüge der physiologischen Psychologie*. W. Wundt. 2 vols. Leipzig, 1887.—*Elements of Physiological Psychology*. Geo. T. Ladd. New York, 1887.—*La Psychologie physiologique*. G. Sergi. Paris (a translation from the Italian).—The following monographs of Ribot's (F. Alcan, Paris) are popular, but are to be recommended for a general view of the subjects treated: *Les maladies de la mémoire*; *Les maladies de la volonté*; *Les maladies de la personnalité*; *La psychologie de l'attention*; *La psychologie allemande contemporaine*. Most of these have been translated; the first forms one of the International Scientific Series; the next two are, I believe, in the "Humboldt Library," and the last is published by the Scribners under the title of "German Psychology of To-day."

It would yield the best results if any one interested in work of this nature would settle on some single topic and pursue that specially. As the above lines are merely suggestions, the author will most gladly answer any further questions that may arise regarding methods or apparatus. Pathological nervous material which may be consigned to the author will be examined and reported on with all due promptness.

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CLARK UNIVERSITY, June, 1889.

*Ueber optische Aphasie und Seelenblindheit*. C. S. FREUND. Archiv f. Psychiatrie, Bd. XX, H. 1 und 2.

The connection of aphasia with disturbances in the visual centers has been noticed by several observers, and Wilbrand has touched on the probable explanation. Dr. Freund's object is to show that this "optical aphasia" is a distinct and independent kind. The seven cases which he gives (two of his own observation and five from the literature), allow the following general description. All showed cerebral defects of vision; in 4 right hemianopsia was demonstrated, in 1 (left-handed) left hemianopsia; and similar trouble was doubtless present in the other two. In five there was psychic blindness. Satisfactory tests for agraphia and alexia were wanting in most. The distinctive disturbances of speech were in all more or less clearly connected with the visual defects, the differences coming chiefly from the degree in which the "optical aphasia" was overlaid by the other kinds. In the simplest cases there was loss of nouns (their place being frequently taken by circumlocutions) and of the ability to name objects. At least two of the cases were helped by handling what they were to name; and to one words not to be given at request sometimes recurred spontaneously. The results of section, in the six cases in which it was made, show extensive lesions, generally in the occipital and temporo-occipital